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(54) **VEHICLE BARRIER WITH ACCESS DELAY**

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See application file for complete search history.

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

4,576,507	A	3/1986	Terio	
4,784,515	A *	11/1988	Krage et al.	404/6
4,822,207	A	4/1989	Swahlan	
5,078,366	A *	1/1992	Sicking et al.	256/13.1
6,022,003	A *	2/2000	Sicking et al.	256/13.1
6,561,492	B1 *	5/2003	Hubbell	256/13.1

6,926,461	B1	8/2005	Faller et al.	
7,037,028	B1	5/2006	Donohoe et al.	
7,544,009	B2 *	6/2009	Bergendahl et al.	404/6
2006/0045617	A1	3/2006	Faller et al.	

**OTHER PUBLICATIONS**

Payne Fence Products, LLC, Product Brochure, "The Normandy Barrier" [online] [retrieved on Aug. 3, 2009] retrieved from the Internet: <URL: <http://www.paynefence.com/fullaccess/Brochures/I%20-%20Payne%20Normandy%20Barrier.pdf>>, 2 pp.

\* cited by examiner

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(57) **ABSTRACT**

An access delay vehicle barrier for stopping unauthorized entry into secure areas by a vehicle ramming attack includes access delay features for preventing and/or delaying an adversary from defeating or compromising the barrier. A horizontally deployed barrier member can include an exterior steel casing, an interior steel reinforcing member and access delay members disposed within the casing and between the casing and the interior reinforcing member. Access delay members can include wooden structural lumber, concrete and/or polymeric members that in combination with the exterior casing and interior reinforcing member act cooperatively to impair an adversarial attack by thermal, mechanical and/or explosive tools.

**23 Claims, 4 Drawing Sheets**

